



## Temperate Rainforest Ecology

**OVERVIEW:** Students will review the concept of ecosystems and thoroughly examine the members of their local ecosystem. By concentrating on a specific relationship within the rainforest ecosystem, students will better understand the entire community.

**OBJECTIVE:** Students will be aware of the important connections between living and non-living parts of the ecosystem. They will understand how seemingly distant events (glacial melt, ocean temperature, industrial development) can impact the local forest.

**BACKGROUND:** Read the Succession and Temperate Rainforest Ecology sections of this manual.

**VOCABULARY:** Canopy, Commensal, Conifer, Decomposer, Epiphyte, Fog Drip, Forest Floor, Lichen, Litterfall, Mutualistic, Nurse Log, Nutrient Cycling, Parasitic, Predatory, Understory.

**PROCEDURE:** One to three days ahead of the classroom activity have students read the sections on Succession and Temperate Rainforest Ecology in this manual and find two online resources that discuss temperate rainforests. Provide them with the vocabulary words to define and help bolster their reading.

**GRADE LEVEL:** 10-12

**SUBJECT:** Relationships in the Temperate Rainforest Ecosystem

**KEYWORDS:** Commensalism, Mutualism, Nutrient Cycling, Parasitism, Predation

**DURATION:** 2-3/60-minute class periods

**GROUP SIZE:** Individuals

**SETTING:** Classroom and at home

**NATIONAL STANDARDS:** Science C 4, 5, 6, F 5, 6

### MATERIALS

Teacher's Resource Manual  
Internet Access

## Day 1

During the classroom activity, allow students to keep their vocabulary list and any resources they've printed with them for use during classroom discussion.

Ask a student to explain the difference between a forest and a rainforest. Follow this with asking a student to explain the difference between a tropical and a temperate rainforest.

Ask if any students can explain what differences there might be between a temperate rainforest in Alaska and in Washington (snow down to sea level, tree species, seasonality).

Review the vocabulary words as a class.

## Day 2

**CLASSROOM DISCUSSION:** Begin with a refresher introduction on the definition of an ecosystem: All of the biotic (living) and abiotic (non-living) elements and how they interact together in a given area (the person doing the research defines the area).

Ask the class to think about the reading they've done and begin to name the biotic and abiotic components of the temperate rainforest. Have one student write the components on the board in a random order with space between words as other students come up with additional components. Try to encourage the class to come up with 15-20 items. Examples: trees, lichen, soil, rivers, bears, insects, salmon, fungus, rotting wood, blueberries, humans, sun, rocks, moss, moose, birds, nutrients.

When enough components are posted, ask if someone can draw a line from one component to another and define the relationship between the two by writing it on the line. Have 2-3 students do an example each. Explain that we are creating a "Web of Connectivity."

**HOMEWORK:** Hand out the activity sheet that explains the Rainforest Web of Connectivity activity.

## Day 3

**CLASSROOM DISCUSSION:** Have students discuss the connections they made on the Rainforest Web of Connectivity homework assignment. Try to encourage lots of classroom participation so different ways of viewing the ecosystem are talked through.

Hand out the second activity "Advocating for the Rainforest." Ask students to let you know what pair they will be doing their poster about such that multiple aspects of the temperate rainforest community are represented.

**ASSESSMENT:** The 2 homework assignments should provide for assessment of students. Check that these points are made in the student's work:

- ✓ The web of relationships should have no less than 15-20 elements in it.
- ✓ Student should be able to describe 10 or more relationships within these elements.
- ✓ Student should be able to clearly define the relationship between the elements chosen.
- ✓ A student with a grasp of the basic material will have no problem creating a poster to promote this relationship.

### ADDITIONAL RESOURCES:

<http://www.inforain.org/>

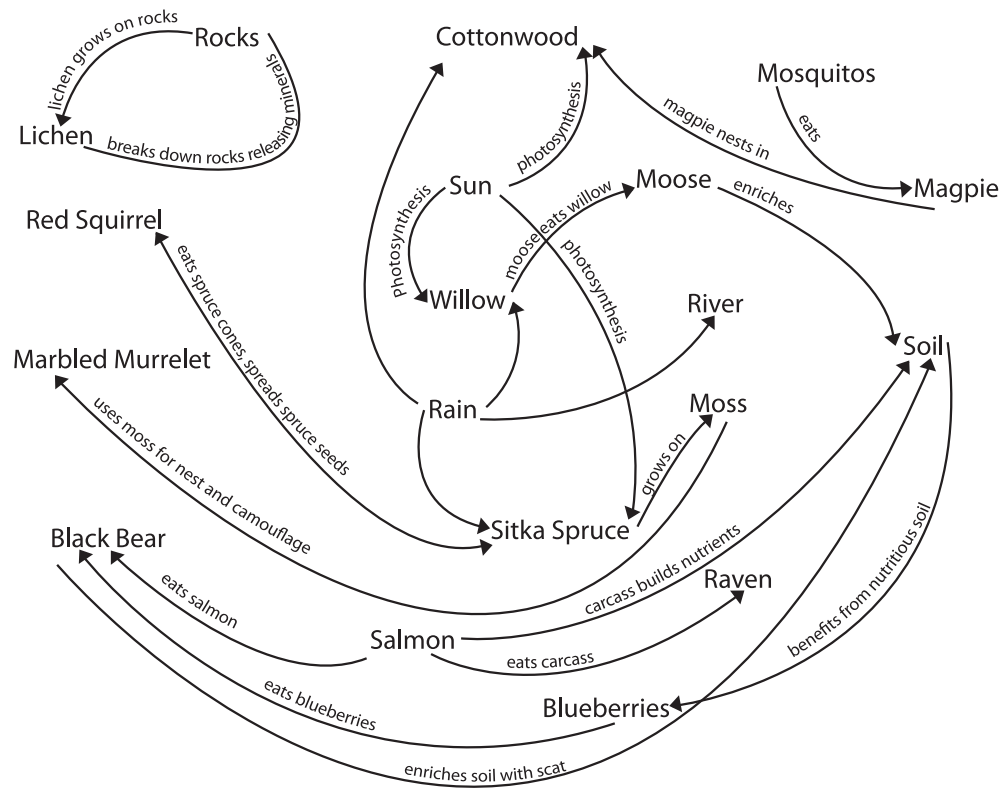
<http://www.nationalgeographic.com/xpeditions/lessons/08/g68/venn.html>

<http://ocid.nacse.org/lichenland/>

[http://curriculum.calstatela.edu/courses/builders/lessons/less/biomes/rainforest/temp\\_rain/temprain.html](http://curriculum.calstatela.edu/courses/builders/lessons/less/biomes/rainforest/temp_rain/temprain.html)

Ancient Forests of the Pacific Northwest by Elliot A. Norse, Island Press, 1989

## The Temperate Rainforest Web of Connectivity



## RAINFOREST WEB OF CONNECTIVITY

### Activity 1

On a blank sheet of paper, recreate the biotic and abiotic elements of the temperate rainforest ecosystem. Leave room between the elements you include so that you can detail the relationships between elements. When you have thought of all of the elements you can (elements not listed in today's discussion are fine to add) begin to draw arrows showing how one element affects another. For example, you might have 'moss' and 'marbled murrelet.' On the arrow going from moss to murrelet write: "The moss makes a camouflaged nesting spot for the murrelet."

Once you have completed your 'Rainforest Web of Connectivity' pick one relationship pair to spend time detailing. Be sure to answer these questions:

- 1.) Describe the two parts of the temperate rainforest ecosystem that you've chosen. Explain in detail the relationship between these two and their contribution to the ecosystem as a whole.
- 2.) How can this relationship be affected by living things outside of the relationship?
- 3.) Can humans impact this relationship? If humans are part of your pair, how might they alter their behavior to change their impacts?
- 4.) How might climate impact this relationship?
- 5.) Is there one member of the relationship that benefits more? Explain. Equally? Explain.
- 6.) If these two elements are both biotic, are they mutualistic, commensal, parasitic or predatory? Explain.

## ADVOCATING FOR THE RAINFOREST

### Activity II

Create a poster advocating for the pair you have chosen. The poster's audience can be humans or the ecosystem in general, or at any individual part of the ecosystem, or at influences completely outside the temperate rainforest ecosystem. Define the poster's audience on the back.